

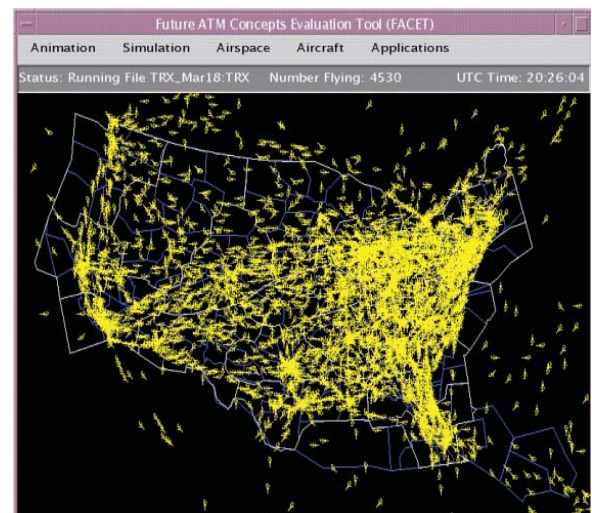
**technology opportunity**

## FACET: Future Air Traffic Management Concepts Evaluation Tool

### Comprehensive Software Eases Air Traffic Management



The figure on the right shows an example of the Graphical User Interface, which consists of a display canvas, a menu bar, and a status bar. The canvas is primarily used to display the selected airspace boundaries, aircraft locations, flight plans, track histories, and aircraft Flight Data Blocks.



The NASA Ames Research Center offers the opportunity to license and codevelop FACET, a flexible software tool for air traffic management. With thousands of planes flying overhead in the U.S. at any given time, there is an urgent need for tools that help avoid air traffic incidents and delays. To help air traffic control centers improve airline safety and efficiency, NASA Ames scientists developed FACET, a system software for performing powerful computational simulations for evaluating advanced concepts of air-traffic management. It includes a program that generates a graphical user interface plus programs and databases that implement computational models of weather, airspace, airports, navigation aids, aircraft performance, and aircraft trajectories.

### Advantages

- Decreases airline accidents
- Highly efficient: FACET can swiftly generate as many as 15,000 aircraft trajectories on a single desktop or laptop computer
- Easy to use: FACET provides trajectories and traffic flow data presented in a 3-D graphical user interface

### Applications

- Air traffic management
- Development of enhanced flight-routing strategies for saving fuel, preserving airline schedules and reducing passenger delays and missed connections

## Technology Details

Actual air traffic data and weather information are utilized to evaluate an aircraft's flight-plan route and predict its trajectories for the climb, cruise, and descent phases. The dynamics for heading (the direction the aircraft nose is pointing) and airspeed are also modeled by the FACET software, while performance parameters such as climb/descent rates and speeds and cruise speeds can also be obtained from data tables. The resulting trajectories and traffic flow data are presented in a 3-D graphical user interface. The FACET software is modular and is written in the Java and C programming languages. Notable FACET application include reroute conformance monitoring algorithms that have been implemented in one of the Federal Aviation Administration's nationally deployed, real time operational systems.

## Patents

This technology has been patented (U.S. Patent 7,702,427).

## Licensing and Partnering Opportunities

This technology is part of NASA's Innovative Partnerships Program, which seeks to transfer technology into and out of NASA to benefit the space program and U.S. industry. NASA invites companies to inquire about licensing possibilities for this technology for commercial applications.

### For More Information

If you would like more information about this technology, please contact:

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